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REMARKS

Responding to a September 2, 2004 Office Action, and by the present response, the specification and Claims 1, 3, 10, 19 through 22, 26, and 32 are amended, Claims 2, 11, and 28 have been canceled, and new Claims 40 through 63 have been added. An additional Filing Fee is attached for the newly added claims. No new matter has been added by the present response. Reconsideration of this patent application is respectfully requested.

Applicant's attorney gratefully acknowledges the courtesies extended by Examiner M. Le during personal interviews on October 21, 2004 and November 18, 2004. During the October 21, 2004 personal interview with Examiner Le, proposed amendments to Claim 1 were discussed in view of the prior art references relied upon in the September 2, 2004 Office Action. At the conclusion of the interview, and as indicated on the 21 October 2004 *Interview Summary*, agreement was reached with Examiner Le regarding the patentability of amended Claim 1. During the November 18, 2004 personal interview with patent Examiner Le, the addition of new Claims 40 through 63 was discussed with Examiner Le.

The amendments to the specification place the disclosure in a preferred form. Notably, no new matter has been added by or through the amendments to the specification.

The present invention relates to a discharge gate assembly for a railroad car. The gate assembly includes a rigid frame having a discharge opening. Notably, the discharge opening of the gate assembly of the present invention is: 1) ledgeless; 2) generally square in cross-sectional configuration; and 3) greater than 1600 square inches. To control the discharge of commodity

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through the discharge opening, a gate slidably moves in a predetermined plane between closed and open positions and relative to the discharge opening. The gate has an upper surface area which is generally equivalent in size to the discharge opening.

The gate assembly frame is configured to inhibit bending thereof under columnar loading adapted to be applied to the greater than 1600 square inches of surface area defined by the upper surface of the gate exposed to commodity carried by the railcar on which the gate assembly is mounted. More specifically, the gate assembly frame includes an upper flange extending outwardly and about a periphery of the frame for facilitating connection of the gate assembly to a hopper of the railroad car. The gate assembly frame further includes wall structure rigidly connected to and depending from the upper flange. Notably, the predetermined plane of movement of the gate is disposed in vertically spaced relation below the upper flange on the frame of the gate assembly.

The gate assembly of the present invention further includes seal structure arranged in sealing engagement with an upper surface and toward a peripheral edge of the gate when the gate is in the closed position. The seal structure is carried by the gate assembly in vertically spaced relation below the upper flange. Moreover, the seal structure is configured to promote movement of the commodity discharged from the railcar to move therepast when the gate is moved toward the open position.

According to the present invention, the gate assembly furthermore includes an operating shaft assembly supported on the gate assembly frame for rotation about a fixed axis. The

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operating shaft assembly is operably coupled to the gate. Moreover, the gate assembly includes a lock assembly mounted on the gate assembly frame. The lock assembly includes a stop for inhibiting inadvertent movement of the gate from the closed position toward the open position.

As discussed with Examiner Le during the October 21, 2004 personal interview, corn is one commodity typically transported in railroad cars. Using a wet milling process, a kernel of corn can be separated into several products. Corn gluten is a by-product of the wet corn milling process. Corn gluten contains significant amounts of energy, crude protein, digestible fiber and minerals. As such, wet corn gluten is used by farmers as an excellent feed.

Wet corn gluten, however, requires special unloading procedures. Wet corn gluten feed has a sticky texture resembling oatmeal and has reduced flow characteristics, thus, exacerbating its discharge from a railroad hopper car. Moreover, the wetness of the material increases the columnar loading placed upon the gate assembly. Settling and compaction of this commodity during transport causes other significant problems during unloading of the product.

Once a hopper car reaches an unloading site, the gate assembly is opened and gravity normally causes the commodity within the walled enclosure or hopper on the car to readily flow therefrom. The reduced flow characteristics, however, of wet corn gluten feed, especially when combined with the tendency of such material to settle during transport, frequently causes bridging of the material across the discharge opening, thus, creating problems in unloading the railcar. Gate supporting ledges extending inwardly toward the discharge opening on the gate assembly only serve to promote formation of a bridge or material plug extending across the

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discharge opening so as to inhibit mass flow of material and, thus, exacerbate the problem of moving sticky materials through the discharge opening of the gate assembly.

U.S. Patent No. 5,829,359 to J. J. Dohr, *et al.* was the primary reference relied upon in the September 2, 2004 Office Action. The '359 Dohr, *et al.* device is one of many unique gate assembly products developed by Miner Enterprises, Inc. - the Assignee of the present invention. While offering advantageous features, the '359 Dohr, *et al.* device includes a gate assembly defining a discharge opening measuring about 30 inches by 30 inches or 900 square inches in cross-section.

In contrast, and as mentioned above, the gate assembly of the present invention defines a discharge opening which is **greater than** 1600 square inches. Structuring the gate assembly with a **square** discharge opening **greater than** 1600 square inches offers several benefits. That is, structuring the gate assembly with a **square** discharge opening **greater than** 1600 square inches allows for rapid discharge of materials from the railcar. As will be appreciated, rapid discharge of materials from the railroad car reduces the amount of time required for unloading of the car and reduces the time the car is essentially removed from service. Moreover, structuring the gate assembly with a **square** discharge opening **greater than** 1600 square inches inhibits: 1) creation of a solid plug spanning such a large distance; and, 2) the ability of any plug or bridge which can span such a distance to withstand the significant gravitational forces acting against such plug or bridge once support from the slidable gate is removed from the underside thereof.

Testing revealed the size of the discharge opening defined by the '359 Dohr, *et al.* device

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simply did not promote the mass flow of corn gluten therethrough. Moreover, and in contrast to the present invention, the side frame and end frame members of the '359 Dohr, *et al.* device converged toward the discharge opening of the gate assembly. Such convergence of the side frame and end frame members of the '359 Dohr, *et al.* device tends, especially during movement of the railcar, to compact the commodity or materials and, thus, tends to make the bridge or plug of material extending across the discharge opening of the gate assembly even thicker and stronger. As such, when the gate is moved toward the open position, such plug or bridge of material inhibits the mass flow of material through the discharge opening of the gate assembly.

Absent the teachings of the present invention, nothing within the four corners of the '359 Dohr, *et al.* patent hints at a problem involving discharge of material through the discharge opening of the gate assembly. Whereas, the '359 Dohr, *et al.* device is structured in a manner antithetical to the present invention. In this regard, attention is directed to Column 5, lines 65 through 67 and Column 6, line 1 which state:

Toward their lower ends, the sides 18, 20 and end walls 22, 24 each define a common support structure upon which a door or gate 30 is mounted for movement between open and closed positions.

Configuring the lower ends of the sides and end walls with support structure projecting into the discharge opening has two adverse effects. First, such gate assembly configuration further constricts the discharge opening. Second, such a design is contrary to the **ledgeless** design set forth in each and every one of the independent claims presented for review. Configuring the lower ends of the frame walls with gate supporting structure extending into the discharge opening

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also provides structure onto which certain commodities can cling and stick and, thus, promote -- rather than detract from -- the creation of a material plug or bridge across the discharge opening.

Simply stated, designing a railroad hopper car gate assembly with a **square and ledgeless** discharge opening having a cross-sectional configuration **greater than 1600 square inches** is simply neither disclosed nor factually suggested within the four corners of the '359 Dohr, *et al.* patent. The problems addressed and solved by the '359 Dohr, *et al.* invention are different from those addressed and solved by the present invention. Nothing within the four corners of the '359 Dohr, *et al.* reference hints at the problems addressed by the present invention. The '359 Dohr, *et al.* device simply does not and cannot offer solutions to the problems presented by the present invention. For these and other reasons, the independent claims presented for review by the present response are considered patentable over U.S. Patent No. 5,829, 359 to J. J. Dohr, *et al.*

Furthermore, U.S. Patent No. 3,348,501 to E. S. Stevens, *et al.* fails to fill the multiple voids separating the claims presented for review from the '359 Dohr, *et al.* device. As discussed with Examiner Le during the October 21, 2004 interview, and in contrast to the independent claims presented for review, the '501 Stevens, *et al.* gate assembly is configured with a long and narrow opening. Contrary to the **square** discharge opening of the present invention, and as specified at Column 1, lines 45 through 47 of the '501 reference, the Stevens, *et al.* gate assembly is designed to operate in combination with:

bottom discharge outlets of dimensions, such as twenty-seven (27) inches by sixty-three (63) inches.

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Within the four corners thereof, the '501 Stevens, *et al.* disclosure fails to recognize the serious and increasingly difficult problems involving the discharge of certain types or kinds of materials through a discharge opening of a railroad hopper car gate assembly. Testing has revealed, and as discussed with Examiner Le during the October 21, 2004 interview, a gate assembly designed with a discharge opening having only twenty-seven (27) inches between opposed sides thereof tends to allow certain material to form a solid plug or bridge across the discharge opening and, thus, exacerbate the already difficult railroad car unloading process. Moreover, to combine the teachings of the '501 Stevens, *et al.* disclosure with that set forth in the '359 Dohr, *et al.* disclosure would require total reconstruction of the railroad car hopper and the size of the railroad car openings between the two different devices in a manner neither disclosed nor factually suggested by either reference.

Simply stated, and unlike the **square** discharge opening design of the present invention, within the four corners thereof, the '501 Stevens, *et al.* disclosure did not recognize any need or desire to increase the size of the gate assembly discharge opening **both** lengthwise and widthwise. Only this Applicant had the ingenuity to foresee the benefits forthcoming from designing a gate assembly with a **square** discharge opening **greater than 1600 square inches**. Only this Applicant had the wit to restructure and reconfigure the frame of the gate assembly to withstand the increased loads placed on a gate assembly having a discharge opening **greater than 1600 square inches**. For his ingenuity and wit, this Applicant is entitled to be awarded a patent.

Besides those non-obvious structural differences mentioned above, and in contrast to the

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claim program presented for review, the '501 Stevens, *et al.* device is further structured in a manner antithetical to the present invention. As mentioned at Column 2, lines 53 through 55, the side frame members 28 of the '501 Stevens, *et al.* gate assembly provide support for the gate 36 device moving between open and closed positions. As mentioned above with regard to the '359 Dohr, *et al.* invention, and in contrast to the claim program presented for review, the '501 Stevens, *et al.* gate assembly IS NOT **ledgeless**.

Configuring the side members of the gate assembly frame to support the gate as taught by the '501 Stevens, *et al.* device has two adverse effects. First, such gate assembly configuration further constricts the discharge opening. Second, such a design is contrary to the **ledgeless** design set forth in each and every one of the independent claims presented for review. As will be appreciated, configuring the sides and/or ends of the gate assembly with structure for supporting the gate concurrently adds an obstruction onto which the certain commodities can cling and stick, thus, promoting creation of a material plug or bridge across the discharge opening.

Furthermore, the claim program defining the present invention further includes **seal structure** carried by the gate assembly frame beneath the upper flange and in engaging relationship toward a peripheral edge of the gate. Notably, the gate assembly seal structure is furthermore structured to promote the movement of commodity therepast. Configuring the seal structure such that the commodity passing through the discharge opening of the gate assembly tends to move therepast is an important design innovation which inhibits material from clinging or sticking to the seal structure thereby reducing the likelihood of material buildup.

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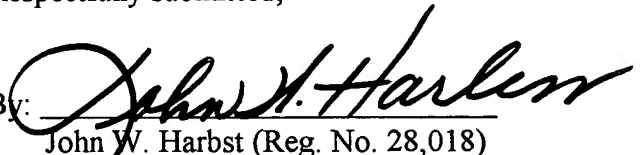
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As discussed with Examiner Le during the October 21, 2004 interview, the '501 Stevens, *et al.* disclosure is silent regarding providing seal structure in operable combination toward a peripheral edge of the gate. In fact, and within the four corners thereof, the '501 Stevens, *et al.* reference fails to disclose or factually suggest providing any form of seal structure in operable combination with the peripheral edge of the gate. As such, there can be no factual disclosure in the '501 Stevens, *et al.* reference of the particular configuration of such seal structure.

For these and other reasons, the claim program presented for review is considered patentable over U.S. Patent No. 5,829, 359 to J. J. Dohr, *et al.* taken alone or in purported combination with U.S. Patent No. 3,348,501 to E. S. Stevens, *et al.* As such, reconsideration of amended Claims 1, 3 through 10, 12 through 27, 29 through 39 as well as consideration of new Claims 40 through 63 is respectfully requested. Moreover, an early passing of this application to allowance is hereby courteously solicited. Should Examiner Le desire to speak with Applicant's attorneys, they may be reached at the number indicated below.

Respectfully submitted;

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